WHAT IS CLAIMED IS:

1. A composition for amplifying in vitro a target polynucleotide region of an initial linear nucleic acid molecule, wherein said composition comprises:

(A) a single-stranded first polynucleotide, wherein said polynucleotide (i) contains a polynucleotide region that is complementary in sequence to said target polynucleotide region, and (ii) is a circular polynucleotide or is circularizable when hybridized to said target polynucleotide region in vitro; and

(B) a second polynucleotide comprising said target polynucleotide region.

2. The composition of claim 1, wherein said single-stranded first polynucleotide is a circular polynucleotide.

3. The composition of claim 1, wherein said single-stranded first polynucleotide is circularizable when hybridized to said target polynucleotide region.

4. The composition of claim 3, wherein said single-stranded first polynucleotide is circularizable via the action of a ligase.

5. The composition of claim 3, wherein said single-stranded first polynucleotide is circularizable via the action of a recombinase.

6. The composition of claim 1, wherein said composition additionally comprise a template-dependent polymerase sufficient to extend a 3' terminus of a polynucleotide hybridized to said single-stranded first polynucleotide in vitro to thereby produce a template-dependent extension product and wherein said polymerase is additionally capable of causing extension-dependent strand displacement of hybridized polynucleotides.

7. The composition of claim 6, wherein said single-stranded first polynucleotide is circular.

8. The composition of claim 6, wherein said single-stranded first polynucleotide is

circularizable.

9. The composition of claim 8, wherein said single-stranded first polynucleotide is circularizable via the action of a ligase.

10. The composition of claim 8, wherein said single-stranded first polynucleotide is circularizable via the action of a recombinase.

11. The composition of claim 1, wherein said single-stranded first polynucleotide contains a modified nucleotide.

12. The composition of claim 11, wherein said modified nucleotide is a ribonucleotide.

13. The composition of claim 11, wherein said modified nucleotide is a biotinylated nucleotide.

14. A kit for amplifying in vitro a target polynucleotide region of an initial linear nucleic acid molecule, wherein said kit comprises:

(A) a first container, said first container containing a single-stranded first polynucleotide, wherein said polynucleotide (i) contains a polynucleotide region that is complementary in sequence to said target polynucleotide region, and (ii) is a circular polynucleotide or is circularizable when hybridized to said target polynucleotide region; and

(B) a second container, said second container containing a second polynucleotide comprising said target polynucleotide region.

15. The kit of claim 14, wherein said single-stranded first polynucleotide is a circular polynucleotide.

16. The kit of claim 14, wherein said single-stranded first polynucleotide is circularizable when hybridized to said target polynucleotide region.

17. The kit of claim 16, wherein said single-stranded first polynucleotide is circularizable

via the action of a ligase.

18. The kit of claim 16, wherein said single-stranded first polynucleotide is circularizable via the action of a recombinase.

19. The kit of claim 14, wherein said reagents additionally comprise a third container, said third container containing a template-dependent polymerase sufficient to extend a 3' terminus of a polynucleotide hybridized to said single-stranded first polynucleotide in vitro to thereby produce a template-dependent extension product and wherein said polymerase is additionally capable of causing extension-dependent strand displacement of hybridized polynucleotides.

20. The kit of claim 19 wherein said first or second polynucleotides contain a modified nucleotide.